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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

09/935,759

Applicant(s)

CARLBERG ET AL.

Examiner

JUNG PARK

Art Unit

2419

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 December 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5, 7-9, 11-20, 22-27, 36-40, 42-44, 46-55, 57, 62 and 73-86 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5, 7-9, 11-20, 22-27, 36-40, 42-44, 46-55, 57, 62, 73-75, 77-79 and 81-86 is/are rejected.
- 7) ☒ Claim(s) 76 and 80 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Final Drawing (PTO-940)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Response to Remark

1. This communication is considered fully responsive to the Amendment filed on 12/21/08.
 - a. No claims have been changed.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.
3. Claims 81-86, 73-75, 77-79, 1-5, 7-9, 11-20, 22-27, 36-40, 42-44, 46-55, and 57-62 are rejected under 35 U.S.C. 103(a) as being unpatentable over Caves et al. (U.S. 6,891,833, "Caves") in view of Barabash et al. (US 5179633, "Barabash").

Regarding claim 81, Caves discloses a node of a data communication network comprising:

- a switch (26 fig.7);
- plural user plane resources (a plurality of AAL2 VCCs to transfer packet switched data, see fig.7) connected to the switch (as shown in fig.7), the plural user plane resources comprising one or more of link resources (AAL2 VCCs, see fig.7) and end system resources (col.8, ln.43-47 where ...certain resource in the end system);
- a cluster of plural processors (37 & 78 fig.7 where processors, not shown, for AAL2 signaling servers; col.3, ln.35-37 where it is inherent to have a processor to execute

AAL2 signaling protocol implemented by software and co-ordination & control 78 as a central processor);

- connection handling functionality (AAL2 signaling controlled by 78 fig.7; col.9, ln.6-16) distributed over the cluster of the plural processors (37 fig.7), the connection handling functionality being configured to facilitate execution of software objects (objections for routing requirements, see col.5, ln.15-18; an objection for resource pool, see col.8, ln.15-24) for setup or release of connections (col.3, ln.35-37 executing AAL2 signaling protocol software in one of AAL2 signaling server (processor) for AAL2 VCC connection);

- wherein for reserving and activating a particular user plane resource of the node (reserving, which is eventually activated for routing functions, to access the resource pool via AAL2 switch, see col.8, ln.15-24) for use in a bearer service connection (a bearer service allowing transmission of information signals between network interfaces, see 11, 12 & 13 fig.1), the software objects include a connection object (software object for connecting AAL2 connections instructed, i.e., connection object, by the control element, see col.9, ln.15-20) and a resource user plane control objects (control objects to access the resource pool via the AAL2 switch, which is instructed by the control element, see col.8, ln.19-22 and col.9, ln.15-20), the connection object being configured to activate the resource user plane control object (AAL2 switch switches AAL2 connections and the resource pool is accessed via AAL2 switch, see col.8, ln.19-22 and col.9, ln.15-20), the resource user plane control object corresponding to a particular user plane resource involved in the connection (resource pool accessed via the AAL2 switch, see col.8, ln.15-24).

Caves discloses an AAL2 signaling server that gives instructions (col.5, ln.15-18), but does not explicitly disclose "software objects." However, Barabash discloses that in object-oriented programming, data and instructions are combined into a single module of software known as an object and the objects pass data and instructions between themselves, requesting information and giving instructions (see col.6, ln.42-53). Ordinary person in the art know that each module, or object, combines data and procedures (sequences of instructions) that act on the data; in traditional, or procedural, programming the data are separated from the instructions. A group of objects that have properties, operations, and behaviors in common is called a class. Therefore, it would have been obvious to one of ordinary skill in the art at the time of applicant's invention to apply the software objects disclosed by Barabash into the AAL2 server or other elements of Caves in order to implement the AAL2 VCC connections using software objects. The motivation of using software objects, in computer program design, is by reusing classes developed for previous applications, new applications can be developed faster with improved reliability and consistency of design.

Regarding claim 82, Caves discloses, "wherein the software objects executed for a connection are executed by one processor of the cluster of plural processors (a processor, not shown, in 38 fig.3 for controlling AAL2 signaling servers; col.6, ln.13-23)."

Regarding claims 83 and 86, Caves does not explicitly disclose, "wherein the software objects executed for a connection are executed by different processors of the cluster of plural processors." However, it would have been obvious to one of ordinary skill in the art at the time of applicant's invention to use a different processor for each of

the objections for handling the connection function, i.e., connection objects, (col.9, ln.15-20) and resource pool function (col.8, ln.15-24) in order to prevent overloading imposed to a processor by using multiple processors according to its functionalities.

Regarding claim 84, Caves discloses a method comprises:

- distributing a connection handling functionality (AAL2 signaling controlled by 78 fig.7; col.9, ln.6-16) over the cluster of the plural processors (37 fig.7), the connection handling functionality comprising software objects configured for setup or release of connections (software object for connecting AAL2 connections instructed, i.e., connection object, by the control element, see col.9, ln.15-20);
- executing, as one of the software objects, a connection object configured to activate a resource user plane control object corresponding to a particular user plane resource (control software objects to access the resource pool via the AAL2 switch, which is instructed by the control element, see col.8, ln.19-22 and col.9, ln.15-20) involved in a bearer service connection (a bearer service allowing transmission of information signals between network interfaces, see 11, 12 & 13 fig.1).

Caves discloses an AAL2 signaling server that gives instructions (col.5, ln.15-18), but does not explicitly disclose "software objects." However, this claim is rejected with the similar reasons and motivation set forth in the rejection of claim 81.

Regarding claim 85, it is a claim corresponding to claim 82 and is therefore rejected for the similar reasons set forth in the rejection of claim 82.

Regarding claims 73 and 77, Caves discloses, "executing at least some of the software objects for setup or lease of a first connection on a first processor of the cluster (col.3, ln.35-37 executing AAL2 signaling protocol software in one of AAL2 signaling server (processor) for AAL2 VCC connection); executing at least some of the software objects for setup or lease of a first connection on a second processor of the cluster (executing AAL2 signaling protocol software in another AAL2 signaling server (processor) for AAL2 VCC connection)."

Regarding claims 74 and 78, Caves discloses, "wherein signaling software objects for the first connection and the second connection are handled by a same processor (a processor, not shown, in 38 fig.3 for controlling AAL2 signaling servers; col.6, ln.13-23)."

Regarding claims 75 and 79, Caves does not explicitly disclose, "wherein at least some of the non-signaling objects for the first connection are handled on a different processor than other non-signaling objects for the first connection." However, it would have been obvious to one of ordinary skill in the art at the time of applicant's invention to use a different processor for each of the objections for handling the routing function (col.5, ln.15-19) and resource pool function (col.8, ln.15-24) in order to prevent overloading imposed to a processor by using multiple processors according to its functionalities.

Regarding claims 1 and 36, Caves further discloses, "infrastructure data (col.9, ln.15-20 routing data) for the connection handling functionality is distributed among the

plural processors of the processor cluster (col.9, ln.15-20); and connection data (col.9, ln.9-12 AAL2 connection data) is created on a selected processor of the processor cluster when an on demand connection is established at the selected processor (col.9, ln.9-12).

Regarding claims 2 and 37, Caves further discloses, the processor cluster handles AAL2 connections (col.9, ln.9-12).

Regarding claims 3 and 38, Caves further discloses, the processor cluster includes a predistributor (78 fig.7) which routes incoming signaling messages to an appropriate processor of the processor cluster (col.9, ln.15-20).

Regarding claims 4 and 39, Caves further discloses, the predistributor resides on one of the plural processors of the cluster which handles connections (78 fig.7).

Regarding claims 5 and 40, Caves further discloses, a processor of the node which does not handle connections serves as the predistributor (78 fig.7).

Regarding claims 7 and 42, Caves further discloses, an administrator processor (processor in 78 fig.7) which distributes the infrastructure data among the plural processors of the processor cluster (rejected in claim 1).

Regarding claims 8, 9, 43, and 44, Caves further discloses, resource handling data is dynamically partitioned among the plural processors of the processor cluster (37 fig.7; col.9, ln.6-16).

Regarding claims 11 and 46, Caves further discloses, when a connection is to be set up to another node, an instance of a connection object is established in a selected one of the processors of the cluster, and wherein the connection object both reserves and activates resources of the node (32 fig.7; col.9, ln.1-20 where function of AAL2 connections).

Regarding claims 12 and 47, Caves further discloses, the connection object reserves a resource of the node by communicating with an instance of a resource control object executed by a processor of the cluster (col.9, ln.1-20 where it is inherent to reserve resource for connections).

Regarding claims 13 and 48, Caves does not explicitly teach, the instance of the resource control object is executed by a same processor which executes the connection object. However, at the time of the invention was made, it would have been an obvious matter of design choice to a person of ordinary skill in the art to include the central control process to one of the signaling servers as a central administrator server to simplify the components of AAL2 node.

Regarding claims 14 and 49, Caves further discloses, the instance of the resource control object (col.9, ln.1-20 where object for selection of one of AAL2 signaling

severs for VCCs) is executed by a different processor than the processor which executes the connection object (note: connection object in AAL2 server).

Regarding claims 15 and 50, Caves further discloses, the connection object determines which instance of a link resource control object with which to communicate by communicating with a routing object executed by a processor of the cluster (col.9, ln.15-20).

Regarding claims 16 and 51, Caves further discloses, the connection object activates a resource of the node by communicating with an instance of a resource user plane object executed by a processor of the cluster (col.9, ln.1-20 where resource reservation for VCCs connection).

Regarding claims 17 and 52, Caves further discloses, the instance of a resource user plane object is executed by a same processor which executes the connection object. This claim is rejected for the same reasons and motivation set forth in the rejection of claim 13.

Regarding claims 18 and 53, Caves further discloses, the instance of the resource user plane object is executed by a different processor than the processor which executes the connection object (col.9, ln.1-20 where AAL2 links allocation for VCCs connection).

Regarding claims 19 and 54, Caves further discloses, setting up the connection to the another node, the connection object uses a signaling object to send a connection establish signaling message to the another node (col.9, ln.1-20 where connection establishment with 32 fig.7).

Regarding claims 20 and 55, Caves further discloses, the connection object communicates with a signaling object executed by a processor of the cluster in order to send the connection establishment signaling message to the another node (col.9, ln.1-20 where connection establishment with 32 fig.7).

Regarding claims 22 and 57, Caves further discloses, for a path incoming to the node the processor cluster has an instance of a resource control path object executed by one of the processors of the cluster, and wherein the instance of the resource control path object handles signaling for the path or for a unique connection identifier within the path, and wherein the predistributor distributes certain signaling messages or indications concerning the path to the instance of the resource control path object (col.9, ln.1-20; col.9, ln.57 - col.10, ln.9).

Regarding claims 23 and 58, Caves further discloses, the path is an AAL2 path handling Q.2630.1 signaling (col.9, ln.1-20 where AAL2 signaling is equivalent to Q2630.1).

Regarding claims 24 and 59, Caves further discloses, an instance of a resource control signaling relation object representing plural paths having a signaling relation, and

wherein the predistributor distributes certain signaling messages or indications concerning the signaling relation path to the instance of the resource control signaling relation object (col.9, ln.1-20 where VCCs).

Regarding claims 25-27 and 60-62, Caves further discloses, the predistributor has four distribution tables, and wherein each of the following are utilized by at least one of the four distribution tables for routing the incoming signaling message: destination signaling association identifier (DSAI); served user generated reference (SUGR); signaling link identity; path identity (col.9, ln.57 - col.10, ln.9 where table for one of DSAI, SUGR, and identifiers).

Allowable Subject Matter

4. Claims 76 and 80 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

5. Applicant's arguments filed have been fully considered but they are not persuasive.

At page 3, with respect to claims 81 and 84, applicant argues that Barabash fails to disclose "software object."

In reply, applicant claims "execution of software objections" for configuration. Caves, the primary reference, discloses an AAL2 signaling server that gives instructions (col.5, ln.15-18) which is equivalent to software, but does not explicitly disclose "software objects." Although Barabash, the secondary reference, does not use objected-oriented

system, Barabash explicitly teaches that in object-oriented programming, data and instructions are combined into a single module of software known as an object and the objects pass data and instructions between themselves, requesting information and giving instructions (see col.6, ln.42-53).

Ordinary person in the art know that each module, or object, combines data and procedures (sequences of instructions) that act on the data; in traditional, or procedural, programming the data are separated from the instructions. A group of objects that have properties, operations, and behaviors in common is called a class. Therefore, it would have been obvious to one of ordinary skill in the art at the time of applicant's invention to apply the software objects disclosed by Barabash into the AAL2 server or other elements of Caves in order to implement the AAL2 VCC connections using software objects. The motivation of using software objects, in computer program design, is by reusing classes developed for previous applications, new applications can be developed faster with improved reliability and consistency of design. Therefore, the examiner respectively disagrees.

Conclusion

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Contact Information

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jung Park whose telephone number is 571-272-8565. The examiner can normally be reached on Mon-Fri during 7:00-3:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edan Orgad can be reached on 571-272-7884. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Jung Park/
Examiner, Art Unit 2419

/Edan Orgad/
Supervisory Patent Examiner, Art Unit 2419